Sturt and Acacia Park Upgrades - Review of Environmental Factors

City of Parramatta Council

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Template 2.8.1

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Abbreviations

Abbreviation	Description
ACHA	Aboriginal Cultural Heritage Assessment
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ASS	Acid Sulphate Soils
BC Act	Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
CAA	Controlled Activity Approval
CEMP	Construction Environmental Management Plan
CM Act	*Coastal Management Act 2016*
CoP	City of Parramatta Council
DPI	Department of Primary Industries
ELA	Eco Logical Australia Pty Ltd
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EP&A Act 1979	*Environmental Planning & Assessment Act 1979*
EP&A Regulation 2000	*Environmental Planning & Assessment Regulation 2000*
EPL	Environmental Protection Licence
FM Act	*Fisheries Management Act 1994*
HBT	Hollow-Bearing Tree
ISEPP	*State Environmental Planning Policy (Infrastructure) 2007*
LGA	Local Government Area
LEP	Local Environmental Plan
MNES	Matters of National Environmental Significance
NES	National Environmental Significance
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NRAR	Natural Resources Access Regulator
OEH	Office of Environment and Heritage
POEO Act	*Protection of the Environment Operations Act 1997*
REF	Review of Environmental Factors
SMCMA	Sydney Metropolitan Catchment Management Authority
SEPP	State Environmental Planning Policy
SHR	State Heritage Register
SIS	Species Impact Statement

Abbreviation	Description
WIRES	Wildlife Information, Rescue and Education Service Inc
WM Act	*Water Management Act 2000*

Executive Summary

Eco Logical Australia Pty Ltd (ELA) was engaged by the City of Parramatta (CoP) Council to prepare a Review of Environmental Factors (REF) for the proposed upgrade works to both Sturt and Acacia Park, Telopea. The works will involve the installation of playground facilities and amenities such as toilets and barbecues, formalisation of walking tracks and demarcation for formalisation of car parking areas. Restoration works will also be required within the riparian zone of Sturt Park to formalise 'the Ponds Walk' walking trail and remove weeds and exotic species.

The environmental assessment and determination of the proposal has been undertaken in accordance with Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). For this proposal, Council is both a public authority proponent and the determining authority. The REF has been prepared in accordance with Clause 228 of the *Environmental Planning & Assessment Regulation 2000* (EP&A Regulation 2000).

The NSW Government has identified Telopea as a priority growth area for urban renewal. It recently rezoned the precinct for high density residential with increased building heights to accommodate 3,500-4,500 new homes (8,000 – 10,500 new residents) within a vibrant new community. Acacia and Sturt Parks are the most significant public open spaces within the precinct and require major upgrade to provide accessible, high-quality open space for the increased future surrounding population.

A Flora and Fauna Assessment was prepared for both Sturt and Acacia parks by ELA (2020). Field survey confirmed that one threatened ecological community occurs within Sturt Park; *Blue Gum High Forest in the Sydney Basin,* which is listed as critically endangered under both the *Biodiversity Conservation Act 2016* (BC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This community within Sturt Park occurs mostly as planted canopy with a predominately exotic understorey. No threatened flora species, or habitat for threatened flora species were identified within the study area. No threatened species were identified during the field survey; however, the study area provided extremely limited potential habitat for the following threatened species:

- *Pommerhelix duralensis* (Dural Land Snail)
- *Chalinolobus dwyeri* Large-eared Pied Bat
- *Myotis Macropus* (Southern Myotis)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Pteropus poliocephalus* (Grey Headed Flying Fox)

A Test of Significance in accordance with Section 7.3 of the *Biodiversity Conservation Act 2016* (BC Act) was undertaken for *Blue Gum High Forest in the Sydney Basin Bioregion* and a Significance Assessment in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was undertaken for *Blue Gum High Forest* in relation to the direct removal of vegetation within the creek bank of Ponds Creek to allow for the installation of sandstone boulders and logs and scrubbing associated with the goal of increasing visitor safety and improving visitor views of the riparian area within Sturt Park. These assessments concluded that the proposed works are unlikely to have a significant impact. Therefore, the preparation of a Species Impact Statement or Biodiversity Development Assessment Report (BDAR) is not required.

Within Acacia Park, no significance assessments were undertaken as no threatened ecological communities are present and impacts from the proposed works will only occur to native planted and exotic species.

An assessment of Aboriginal heritage was undertaken in accordance with the Due Diligence Code of Practice as set out in the Office of Environment and Heritage's (OEH) *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010) (ELA 2020). A site inspection undertaken by ELA archaeologist Jennifer Norfolk on 12 June 2020 identified that both study areas had low ground visibility due to grass cover and recreational amenities. Both study areas have been heavily disturbed through past vegetation clearance, land use and construction of the parks and associated facilities. It was determined that there was low archaeological sensitivity in both parks. However, two AHIMS sites have previously been recorded within the study area (AHIMS ID 45-6-2407 and AHIMS ID 45-6-2569 in Acacia Park and Sturt Park respectively). The site inspection did not identify either of these sites and no additional Aboriginal objects were located. Nonetheless, as a precautionary approach, both sites were treated as valid and will be avoided by the proposed works by creating a 2 m protective buffer around both sites. Therefore, warranting no further assessment.

Additionally, an Archaeological Assessment was undertaken for Acacia Park (ELA 2020), which determined that there is high potential for archaeological remains of heritage item A6 "Kishnaghur" (Parramatta LEP 2011), in particular, the remains of the sandstone cellars of Kishnaghur as well as below ground remains of outbuildings and deep features such as wells/cisterns, cess pits and /or rubbish dumps. To avoid impacting on these structures, the CoP has chosen to raise the level of the ground in the location of the identified features to the depth required for construction (i.e. raising the ground level to a depth that would be required for excavation). The Geotechnical Investigation (Ideal Geotechnical, 2020) concluded that there is approximately 200 mm of topsoil consistent across the site and can be removed without causing impact to potential archaeological relics. Prior to the proposal upgrades, the current levels of the park will require modification where excavation is required below 200 mm in the areas of high potential by raising the ground level, particularly in the southern portion of the site, to avoid impacting the archaeological remains of Kishnaghur and its outbuildings. The exact raising required will be determined on the specific excavation depth requirements of individual elements within the upgrade. This will ensure the proposed works will not result in impacts to areas of high archaeological potential.

A community engagement report (KJA 2019) was also developed to ensure the proposed upgrade reflects community needs and expectations. This highlighted overall community support of the proposed works and provided a number of opportunities for potential community feedback to be incorporated into the detailed design of the project.

Overall, the proposed works are not likely to have a significant impact on any aspect of the environment subject to implementation of the recommended mitigation measures.

1. Introduction

1.1 Project Description and Background

The City of Parramatta Council (CoP) propose to undertake upgrade works to Sturt Park and Acacia Park within the suburb of Telopea. The works will involve the installation of playground facilities and amenities such as toilets and barbecues, formalisation of walking tracks and demarcation for formalisation of car parking areas. Restoration works will also be required within the riparian zone of Sturt Park to formalise 'the Ponds Walk' walking trail and remove weeds and exotic species.

The works are to be assessed under Part 5 of the *Environmental Planning & Assessment Act 1979* (EP&A Act 1979) with the CoP as the determining authority. This Review of Environmental Factors (REF) has assessed all environmental factors listed in clause 228 of the *Environmental Planning & Assessment Regulation 2000* (EP&A Regulation 2000) to the fullest extent possible and outlines impact mitigation measures to be undertaken in line with best practice and the council's policies and procedures.

As part of this assessment, the following specialist studies were undertaken, and the results have been incorporated into this document:

- Sturt and Acacia Park Upgrades - Flora and Fauna Assessment (ELA 2020);
- Sturt and Acacia Park, Telopea Upgrades - Aboriginal Heritage Due Diligence Assessment (ELA 2020);
- Acacia Park Upgrades – Historical Archaeological Assessment (ELA 2020);
- Sturt and Acacia Improvement Project – Engagement Report (KJA 2019); and
- Geotechnical Report (Ideal Geotech 2020)

This REF has been prepared utilising the concept plans found in Appendix A, which have been mapped in Figure 2 and Figure 3.

1.2 Project Location and Context

Sturt Park and Acacia Park are both located within the suburb of Telopea, within the CoP Local Government Area (LGA) (Figure 1).

The works within Acacia Park will be undertaken within:

- Lot E (DP36692)

Acacia park is bordered by Evans Road, Osborne Drive, Lord Avenue and Tilley Street.

The works within Sturt Park will be undertaken within the following Lots:

- Lot T (DP36691)
- Lot 3 (DP506811)
- Lot 13 (DP524335)

Sturt Park is bordered by Sturt St, Kissing Point Road, Chestnut Avenue and Telopea Public School.

Figure 1: Location of proposed works

Figure 2: Concept Plan for Acacia Park

Figure 3: Concept Plan for Sturt Park

1.3 Land Use and Ownership

1.3.1 Land Use

In accordance with the *Parramatta Local Environmental Plan* 2011 (Parramatta LEP 2011), the majority of Sturt Park, and entirety of Acacia Park are zoned as RE1 (Public Recreation), with the Ponds Creek riparian corridor within Sturt Park zoned W1 (Natural Waterways). The applicable objectives of these zones are as follows:

RE1 (Public Recreation)

- *To enable land to be used for public open space or recreational purposes.*
- *To provide a range of recreational settings and activities and compatible land uses.*
- *To protect and enhance the natural environment for recreational purposes.*

W1 (Natural Waterways)

- *To protect the ecological and scenic values of natural waterways.*
- *To prevent development that would have an adverse effect on the natural values of waterways in this zone.*
- *To provide for cultural and scientific study of natural waterways.*
- *To enable works associated with the rehabilitation of land towards its natural state.*

1.3.2 Land Ownership

A portion of The Ponds Creek within Sturt Park is mapped as Crown Land, and therefore the Department of Planning, Industry and Environment (DPIE) – Crown Lands should be consulted prior to the commencement of any works within the watercourse. All other areas within the study area are owned by the CoP and no other landowner consultation will be required.

1.4 Detailed Scope of Works

1.4.1 Site Set Up – Both sites

- Transport of machinery, equipment and materials to the site and establishment on site storage compound and parking areas.
- Installation of sediment and erosion protection measures in accordance with the 'Blue Book' Soils and Construction, Managing Urban Stormwater (Landcom, 2004) with reference to Chapter 5 'Erosion Control: Management of Water'.
- Installation of protection and exclusion fencing around vegetation that are to be protected and to delineate area of works.

1.4.2 Sturt Park

1.4.2.1 Construction Works

- Placement of entry signage and upgrades to park frontage to improve passive surveillance into park and provide improved park identity.
- Construction of new amphitheatre terracing with informal hardstand space (stage) for possible performances, tai-chi, fitness, yoga etc.
- Expansion of existing skate park facility.

- Construction of recreational pedestrian circuit pathway with sheltered rest stops, including lighting placed intermittently.
- Turfing of open space areas for informal play.
- Construction of 2 new playground areas.
- Intermittent placement of barbecue facilities and picnic shelters.
- Demolition of existing amenities building and construction of a new amenities building.
- Extension of existing basketball court and transformation into new multi-use facility.
- Formalisation of 'The Ponds Walk' trail including bush regeneration along Ponds Creek to remove weed and exotic trees and extend planting edge on northern side sensitive to park ecology and heritage.

1.4.2.2 Restoration Works

- The bushland regeneration works will be undertaken in two stages:
  - Stage One: Restoration of creek line along northern bank at walking track entrance, including the following:
    - Removal of all exotic trees.
    - Installation of mulch.
    - Installation of sandstone boulders as part of armouring the creek banks
    - Revegetation with locally indigenous species utilising grasses, sedges and other low growing tubestock at 5/m^2 and some trees (ensuring sightlines across the park are maintained for passive surveillance).
  - Stage Two: Restoration of the entire length of the creek riparian zone within the reserve, including the following:
    - Removal of all exotic trees within 3 m of creek banks.
    - Installation of mulch.
    - Revegetation with locally indigenous species utilising grasses, sedges and other low growing tubestock at 5/m^2 and some trees (ensuring sightlines across the park are maintained for passive surveillance).
- Development of formalised crossing over Sturt Street to connect trail from Sturt Park to Ponds Creek Reserve North open space and Moffatts Drive.
- New tree plantings, including feature trees, low-lying shrubs and groundcovers.

1.4.3 Acacia Park

1.4.3.1 Construction Works

- Proposed access pathway connections from Evans Road to park and boundary fencing with park signage to Evans Road.
- Re-lining to mark car parking spaces and provide two new central disabled parking spaces with shared zone and new kerb ramp.
- Removal of existing play space and placement of new play equipment, soft fall safety surfacing, seating, fencing between playspace and Lord Avenue and irrigated garden beds planted with native grasses.
- Construction of 280 m long main concrete circuit pathway with painted walking distance track markers, mature native tree planting, seating and possible solar lighting.

- Tree planting to develop 'forest grove' and placement of crushed sandstone to delineate informal discovery pathways.
- Construction of new amenities building, including 1 x ambulant and 1 x disabled cubicle and park irrigation control system.
- Intermittent installation of furniture including shelters and picnic settings, bins, drinking stations and seating.
- Earthworks for placement of compliant accessible 3.3m high viewing mound. Viewing mound and surrounding area will include circular concrete viewing platform with seating, accessible concrete ramps, irrigated garden beds mass planted with native plants and children's sandstone block rock-climb.
- Regrading of lawn area south of new mound to provide flat, turfed open space for informal play and kickabout area.
- Mulching under existing trees and removal of deadwood. Crown raise canopies to minimum of 3 m to improve visual surveillance, safety and park identity.

1.4.4 Post Construction

- Remove excess materials and dispose of excavated debris as appropriate.
- Removal of any temporary construction signage and fencing following works completion.

It is recommended that a Construction Environmental Management Plan (CEMP) is prepared prior to on-ground works. This will specify the location of proposed site compound and stockpiling areas for materials and equipment, and 'no go' zones around environmentally sensitive areas. The CEMP will also prescribe erosion and sediment controls during the construction period and include further mitigation and safeguards in accordance with Section 5.

1.4.5 Machinery, Equipment, Access and Ancillary Works

Works will be undertaken predominantly using machinery such as:

- Excavator(s) for earthworks
- Skip bins
- Bobcat
- Concrete trucks
- Pedestrian rollers
- Mounted piling rig

Access to the site will be via the existing road infrastructure:

- Sturt Street (Sturt Park)
- Osborne Parade (Acacia Park)

No additional access roads are required.

1.5 Project Justification and Consideration of Alternatives

The primary objectives of the proposed works are to improve the overall amenity of the area and improve the capacity of the two existing CoP parks to accommodate the growing demand from increased surrounding residential densities.

The NSW Government has identified Telopea as a priority growth area for urban renewal. It recently rezoned the precinct for high density residential with increased building heights to accommodate 3,500-4,500 new homes (8,000 – 10,500 new residents) within a vibrant new community. Acacia and Sturt Parks are the most significant public open spaces within the precinct and require major upgrade to provide accessible, high-quality open space for the increased future surrounding population. A recent assessment of Social Infrastructure in the precinct highlights that both Acacia Park and Sturt Park are presently "unable to keep up with demand," and this will be exacerbated by the future increased population.

A community engagement survey was undertaken by CoP, which gave the community an opportunity to share their thoughts on the look and feel of the proposed park upgrades. The results of the surveys indicated that 97.6% of respondents approved to the changes to lighting in Sturt Park, 90.2%% with the proposed location of the amenities building and 97.6% approved of the proposed bushland upgrades, including restoration works.

Several options were also considered for the themes to play equipment, with respondents indicating a generally equal distribution of preference.

Within Acacia Park, 87.1% of respondents indicated a positive reaction to the proposed construction of playground fencing, 93.3% reacted positively to the proposed landscaping changes and 80.7% approved of the construction of an older children's play area.

The final concept design aims to maximise native tree retention and it is recommended that any proposed landscape plantings are consistent with the recommendations of the Flora and Fauna Assessment to optimise habitat opportunities.

2. Statutory and Planning Context

Table 1: Statutory Context

Name	Relevance to the Project
	Commonwealth
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act protects Matters of National Environmental Significance (MNES), such as threatened species and ecological communities, migratory species (protected under international agreements), and National Heritage places (among others). Any actions that will or are likely to have a significant impact on the MNES require referral and approval from the Australian Government Environment Minister. Significant impacts are defined by the Commonwealth (reference http://www.environment.gov.au/epbc/guidelines-policies.html) for MNES. *Pteropus poliocephalus* (Grey-headed Flying Fox) was identified as having potential to occur within the site, however an assessment of significance was not required for as the proposed works would only impact a small amount of non-canopy species. A significance assessment in accordance with the EPBC Act was undertaken for *Blue Gum High Forest* in relation to the direct removal of vegetation with the creek bank of Ponds Creek. The assessment concluded that the proposed works are unlikely to have a significant impact on the above threatened ecological community.
Disability Discrimination Act 1992	The *Disability Discrimination Act 1992* seeks to eliminate, as far as possible discrimination against persons on the ground of disability and to ensure that persons with disabilities have the same rights to equality before the law as the rest of the community. The Act aims to promote recognition and acceptance within the community of the principle that persons with disabilities have the same fundamental rights as the rest of the community. The proposed upgrade works will ensure consistency with the above as equitable access including accessible pathways and toilets will be incorporated into the design.
	State
Biodiversity Conservation Act 2016 (BC Act)	The BC Act seeks to conserve biological diversity at bioregional and State scales; to maintain the diversity and quality of ecosystems and enhance their capacity to adapt to change and provide for the needs of future generations; to assess the extinction risk of species and ecological communities and identify key threatening processes through an independent and rigorous scientific process; and to establish a framework to avoid, minimise and offset the impacts of proposed development and land use change on biodiversity. Section 7.3 of the Act requires proponents of activities subject to Part 5 of the EP&A Act to determine whether they will have a significant impact on threatened species. The test for significant impact is described in section 7.3 of the Act. A significant impact also occurs if the activity is carried out in an area of outstanding biodiversity value. If a significant impact is likely to occur, the proponent of the activity must prepare a Species Impact Statement (SIS) in accordance with section 7.20 or a Biodiversity Development Assessment Report (BDAR). A Test of Significance was undertaken for *Blue Gum High Forest in the Sydney Basin Bioregion.* The assessment concluded that a significant impact is not likely to result and therefore the preparation of a SIS or BDAR is not recommended.
Environmental Planning and Assessment Act 1979 (EP&A Act 1979)	The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of proposals. As Council is the proponent, the works are to be assessed as 'development permissible without consent' under Part 5 of the EP&A Act 1979. Accordingly, as the determining authority, Council must satisfy Sections 5.5 and 5.7 of that Act by examining, and taking into account to the fullest

Name	Relevance to the Project
	extent possible, all matters which are likely to affect the environment. This REF is intended to assist, and ensure compliance, with the EP&A Act 1979 including Sections 5.5 and 5.7. This report addresses the requirements of s228 of the EP&A Regulation 2000.
Biosecurity Act 2015	The Biosecurity Act repealed the *Noxious Weeds Act 1993* and provides a framework for the prevention, elimination and minimisation of biosecurity risks posed by biosecurity matter, dealing with biosecurity matter, carriers and potential carriers, and other activities that involve biosecurity matter, carriers or potential carriers. Part 3 of the Biosecurity Act applies a general biosecurity duty for any person who deals with a biosecurity matter or a carrier to prevent, eliminate or minimise any biosecurity risk they may pose. Under section 23 of the Act, a person who fails to discharge a biosecurity duty is guilty of an offence. Whilst the Act provides for all biosecurity risks, implementation of the Act for weeds is supported by Regional Strategic Weed Management Plans (RSWMP) developed for each region in NSW. Appendix 1 of each RSWMP identifies the priority weeds for control at a regional scale. However, landowners and managers must take appropriate actions to reduce the impact of problem weed species regardless of whether they are listed in Appendix 1 of the RSWMP or not as the general biosecurity duty applies to these species. A number of priority weeds, as identified within the Greater Sydney RSWMP, were present within the study area and will require management by City of Parramatta Council.
Fisheries Management Act 1994 (FM Act 1994)	The FM Act provides for the protection, conservation, and recovery of threatened species defined under the Act. It also makes provision for the management of threats to threatened species, populations, and ecological communities defined under the Act, as well as the protection of fish and fish habitat in general. In particular, the FM Act 1994 has mechanisms for the protection of mangroves, seagrasses and saltmarshes on public water land and foreshores. It is an offence to harm marine vegetation without a permit from DPI (Department of Primary Industries) Fisheries. No areas mapped as Key Fish Habitat are located within or near the study area. However, works should be conducted in accordance with NSW Fisheries' '*Policy and guidelines for fish habitat conservation and management'* (Fairfull, 2013) to minimise harm to the aquatic environment of The Ponds Creek.
National Parks and Wildlife Act 1974 (NPW Act 1974)	The NPW Act 1974 is administered by the Chief Executive of the National Parks and Wildlife Services, who is responsible for the control and management of all national parks, historic sites, nature reserves, and Aboriginal areas (among others). The main aim of the Act is to conserve the natural and cultural heritage of NSW. The Act aims to conserve the natural and cultural heritage of NSW. Where works will disturb Aboriginal objects, an Aboriginal Heritage Impact Permit (AHIP) is required. A requirement of Clause 16 of the Infrastructure SEPP is for consultation with the National Parks and Wildlife Service (NPWS) where the proposed works occur on or adjacent to National Parks Estate. The proposed works are not within or adjacent to national park and therefore consultation is not required. ELA has undertaken an Aboriginal Heritage Due Diligence Assessment to determine any potential impacts to Aboriginal objects or places. The assessment determined that both study areas have been heavily disturbed through past vegetation clearance, land use and construction of the park and its facilities. There is low archaeological sensitivity in both study areas. However, two AHIMS sites have previously been recorded within the study area (AHIMS ID 45-6-2407 and AHIMS ID 45-6-2569 in Acacia Park and Sturt Park respectively). The site inspection did not identify either of these sites and no additional Aboriginal objects were located. Nonetheless, as a precautionary approach, both sites were treated as valid and will be avoided by the proposed works by creating a 2 m protective buffer around both sites
Heritage Act 1977	The *Heritage Act 1977* provides protection of the environmental heritage of the State which includes places, buildings, works, relics, movable objects or precincts that are of State or local

Name	Relevance to the Project
	heritage significance. A key measure for the identification and conservation of State significant items is listing on the State Heritage Register (SHR) as provided in Part 3A of the Heritage Act. ELA has undertaken an Archaeological Assessment (ELA 2020) for the below heritage items to determine any potential impacts of the works: • Item Number A6 – "Kishnaghur" archaeological site – Parramatta LEP 2011 Acacia Park is considered to have high historical archaeological potential. The park has high potential to contain the remains of the sandstone cellars of Kishnaghur as well as below ground remains of outbuildings and deep features such as wells/cisterns, cess pits and /or rubbish dumps. Prior to the proposal upgrades, the current levels of the park will require modification in the areas of high potential by raising the ground level where excavation is required below 200 mm, particularly in the southern portion of the site, to avoid impacting the archaeological remains of Kishnaghur and its outbuildings. The exact raising required will be determined on individual excavation depth requirements. This will ensure the proposed works will not result in impacts to areas of high archaeological potential.
Protection of the Environment Operations Act 1997 (POEO Act 1997)	The POEO Act 1977 is the key environmental protection and pollution statute. The POEO Act 1977 is administered by NSW Office of Environment and Heritage (OEH) and establishes a licensing regime for waste, air, water and pollution. Relevant sections of the Act are listed below: • Part 5.3 Water Pollution • Part 5.4 Air Pollution • Part 5.5 Noise Pollution • Part 5.6 Land Pollution and Waste Any work potentially resulting in pollution must comply with the POEO Act 1977. Relevant licences must be obtained if required. No licences have been identified as being required including an Environmental Protection Licence (EPL).
Water Management Act 2000 (WM Act 2000)	The WM Act aims to provide for the sustainable and integrated management of water resources for NSW. The Act requires developments on waterfront land to be ecologically sustainable and recognises the benefits of aquatic ecosystems to agriculture, fisheries, and recreation. The WM Act is administered by the Natural Resources Access Regulator (NRAR) and establishes an approval regime for activities within waterfront land, defined as the land 40 m from the highest bank of a river, lake or estuary. A Controlled Activity Approval (CAA) is typically required for work within waterfront land. Section 91E of the Act creates an offence for carrying out a controlled activity within waterfront land without approval. According to Section 41 of the *Water Management (General) Regulation 2018,* a public authority is exempt from Section 91E (1) of the Act. Therefore, Council does not need to obtain a CAA from the NRAR as part of these works. However, works should be designed and constructed as per the NRAR's *'Controlled Activities on Waterfront Land: Guidelines for watercourse crossings on waterfront land'* (DPI Water, 2012).
Local Government Act 1993	The *Local Government Act 1993* provides a legal framework for an effective, efficient and environmentally responsible and open system of local government in NSW. The framework gives councils the ability to provide goods, services and facilities and to carry out activities appropriate to the current and future needs of local communities and the wider public. The Act requires the use and management of community land to be regulated by a plan of management. Until a plan of management is adopted, the nature and use of the land must not change. Under the Act, the land associated with Sturt Park will be categorised as a park/natural area – watercourse. The core objectives for management of community land categorised as a natural area are: *a. to conserve biodiversity and maintain ecosystem function in respect of the land, or the feature or habitat in respect of which the land is categorised as a natural area, and* *b. to maintain the land, or that feature or habitat, in its natural state and setting, and*

Name	Relevance to the Project
	c. to provide for the restoration and regeneration of the land, and *d. to provide for community use of and access to the land in such a manner as will minimise and mitigate any disturbance caused by human intrusion, and* *e. to assist in and facilitate the implementation of any provisions restricting the use and management of the land that are set out in a recovery plan or threat abatement plan prepared under the Threatened Species Conservation Act 1995 or the Fisheries Management Act 1994.* The core objectives for management of community land categorised as a watercourse are: *a. to manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and water flows, and* *b. to manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability, and* *c. to restore degraded watercourses, and* *d. to promote community education, and community access to and use of the watercourse, without compromising the other core objectives of the category.* The land associated with Acacia Park will be categorised as a park, the core objectives of which are as follows: *a. to encourage, promote and facilitate recreational, cultural, social and educational pastimes and activities, and* *b. to provide for passive recreational activities or pastimes and for the casual playing of games, and* c. *to improve the land in such a way as to promote and facilitate its use to achieve the other core objectives for its management.*
Contaminated Land Management Act 1997	The *Contaminated Land Management Act 1997* aims to establish a process for investigating and remediating land that the New South Wales Environmental Protection Authority (NSW EPA) considers to be contaminated significantly enough to require regulation. The Act sets out accountabilities for managing contamination and aims to ensure that contaminated land is managed with regard to the principles of ecologically sustainable development. No current or previous contamination notices apply within the study area, and further assessment under the *Contaminated Land Management Act 1997* were required for the proposed works.
	Planning Instruments
State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP 2018)	The Coastal Management SEPP 2018 aims to manage development within coastal zones and protect the environmental assets of the coast. In accordance with Section 5 of the *Coastal Management Act 2016* (CM Act 2016), the term coastal zone is defined as any area of land that comprises the following coastal management areas: • Coastal wetlands and littoral rainforests • Coastal vulnerability areas • Coastal environment areas • Coastal use areas. No coastal wetlands or littoral rainforests occur in proximity to the works areas.
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (Vegetation in Non-Rural Areas SEPP 2017)	The Vegetation in Non-Rural Areas SEPP 2017 aims to protect the biodiversity values of trees and other vegetation in non-rural areas of the State and preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation. Clause 8 of the policy states that an authority to clear vegetation is not required under this Policy if it is clearing of a kind that is authorised under section 60O of *the Local Land Services Act 2013*. Under section 60O of the *Local Land Services Act 2013*, the clearing of native vegetation in a regulated rural area is authorised if the clearing is undertaken for an activity carried out by a determining authority within the meaning of Part 5 of the EP&A Act after compliance with that part.

Name	Relevance to the Project
	As Council is both the proponent and determining authority for the works, this REF will ensure adherence to the above.
State Environmental Planning Policy No 19—Bushland in Urban Areas (Bushland in Urban Areas SEPP)	The general aim of the Bushland in Urban Areas SEPP is to protect and preserve bushland within specified urban areas because of its value to the community as part of the natural heritage, its aesthetic value and its value as a recreational, educational and scientific resource. The Bushland in Urban Areas SEPP applies to the Parramatta LGA, in particular bushland zoned or reserved for public open space purposes. The vegetation within both parks is located within Public Recreation area. Section 7 of the Bushland in Urban Areas SEPP requires public authorities to have regard to the aims of the Policy. This vegetation is required to be removed to improve the safety, amenity and potential use of both parks. Therefore, the disturbance of the bushland is essential for a purpose in the public interest and no reasonable alternative is available. The proposed park designs will ensure that the amount of bushland proposed to be disturbed is as little as possible, and revegetation will occur.
State Environmental Planning Policy 55 – Remediation of Land (SEPP 55)	SEPP 55 provides a State-wide planning approach to the remediation of contaminated land. In particular, the policy aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any aspect of the environment. The works are not to be undertaken on land where there is a known occurrence of contamination, and Council will act as the consent authority. Therefore, the provisions of this SEPP will not inhibit the works being undertaken.
State Environmental Planning Policy (Infrastructure) 2007 (ISEPP 2007)	The aim of this Policy is to facilitate the effective delivery of infrastructure across NSW by identifying whether certain types of infrastructure require consent, can be carried out without consent or are exempt development. Pursuant to Clause 65 (3) of the ISEPP 2007, development may be carried out by or on behalf of a council without consent on a public reserve under the control of or vested in the council for the purpose of: *(i). roads, pedestrian pathways, cycleways, single storey car parks, ticketing facilities, viewing platforms and pedestrian bridges,* *(ii). recreation areas and recreation facilities (outdoors), but not including grandstands* *(v). landscaping, including landscape structures or features (such as artwork) and irrigation systems,* *(vi). amenities for people using the reserve, including toilets and change rooms* *(b) environmental management works,* As the works will be undertaken in order to develop a recreation area, and the associated amenities, development will be assessed as development without consent. Part 2 of the ISEPP 2007 contains provision for public authorities to consult with other agencies prior to the commencement of development, as described in Section 5.
Parramatta Local Environmental Plan 2011 (Parramatta LEP 2011)	**Acid Sulphate Soils** The study area is mapped as having Class 5 (Unlikely) Acid Sulphate Soils in accordance with Clause 6.1 of the Parramatta LEP 2011. **Terrestrial Biodiversity** In accordance with Clause 6.4 of the Parramatta LEP 2011, a small section of the study area located within Sturt Park is mapped as Terrestrial Biodiversity (Figure 4). The objectives of which are as follows: *(a) protecting native fauna and flora,* *(b) protecting the ecological processes necessary for their continued existence,* *(c) encouraging the recovery of native fauna and flora and their habitats.*

Figure 4: Areas mapped as Terrestrial Biodiversity in relation to the study areas

3. Existing Environment and Impact Assessment

3.1 Landform, Geology and Soils

3.1.1 Existing Environment

The proposed works within Sturt Park will be located primarily on the Gymea soil landscape (Figure 5). The Gymea soil landscape is dominated by undulating to rolling rises and low hills on Hawkesbury sandstone. The local geology is typified by medium to coarse-grained quartz sandstone with minor shale and laminite lenses.

Acacia Park is underlain by the Glenorie soil landscape, which is comprised of undulating to rolling low hills on Wianamatta Group shales and a local relief of 50 – 80 m. Glenorie soils are comprised of Wianamatta Group Ashfield Shale and Bringelly Shale formations, which are comprised of laminite and dark grey shale and shale, calcerous claystone, fine to medium grained lithic-quartz sandstone, respectively.

A geotechnical report for Acacia Park was also undertaken by Ideal Geotechnical (2020), which consisted of the testing of six boreholes. The deposits throughout the park were fairly consistent comprising 20-30 cm of brown silty clay and gravel, above 60-80 cm of silty brown clay or residual soil and shale at 80 cm-1.5 m.

3.1.2 Impact Assessment

The proposed works will require vegetation removal and excavation works. The works will require disturbance of soil and earthmoving machinery within the disturbance footprint.

Placement of foundations may require specific design parameters to be adhered to during construction works due to the existing subsurface conditions. Consideration of the possible presence of groundwater should be undertaken during drilling works. These works also have the potential to impact on soil stability and result in soil erosion.

Positive impacts on soil stability will occur within Sturt Park due to the proposed restoration works within Ponds Creek, which will include the replanting of native species. This will in turn slow the rate of erosion of the riverbank and lead to bank stabilisation.

During operation, impacts to landform, geology and soils are not anticipated as no impacts below the ground surface will occur during day to day use of the parks.

The risk of soil erosion during the works will be low provided the recommended mitigation measures described in Section 5 are implemented.

Figure 5: Mapped Soil Landscapes in relation to the study areas (Sydney 100k sheet)

3.2 Contaminated Land and Acid Sulphate Soils

3.2.1 Existing Environment

The NSW EPA Contaminated Land Register was checked for known contaminated land or potential contamination risk within the suburb of Telopea. There are no current or previous contamination notices that apply within the study area. There was no obvious indication of gross contamination (i.e. staining, odours or distressed vegetation) noted during the field survey.

This does not however eliminate the risk of contaminated soils occurring within the site. It is unlikely that gross contamination exists or that any existing contamination would pose a risk to human health or the environment. However, illegal dumping may have occurred within the area.

A review of databases in accordance with Clause 6.1 of the Parramatta LEP 2011 and the Office of Environment and Heritage (OEH) 2017 mapping indicated that the site is mapped as having Class 5 Acid Sulphate Soils (ASS) (Figure 6).

3.2.2 Impact Assessment

Based on the nature of the works, there is the limited potential for ASS to be disturbed as deep excavations will not be required. However, disturbance of ASS can lead to reduction in water quality through lowered pH, acid erosion of infrastructure and habitat loss. These impacts have the potential to flow into environmentally sensitive areas such as The Ponds Creek, adjacent to Sturt Park.

Use of hazardous chemicals will be required to undertake the works. Fuel and oil for the running of machinery will be used.

The potential environmental impacts associated with the proposed works that relate to contamination include:

- Pollution of sediments from chemical spills (e.g. fuel or oil from machinery);
- Accidental spillage of concrete; and
- Disturbance of ASS, resulting in acid erosion of infrastructure and potential impacts to vegetation and aquatic habitat.

Mitigation measures have been provided in Section 5 to address and mitigate any impacts associated with the incidental discovery of soil contamination, accidental chemical spills and the disturbance of ASS during construction.

Figure 6: Mapped Acid Sulphate Soils in relation to the study areas

3.3 Watercourses

3.3.1 Existing Environment

The Ponds Creek, a second order stream in accordance with the Strahler classification System, is located in the southern portion of Sturt Park (Figure 8). The Ponds Creek is not mapped as Key Fish Habitat.

The reach of Ponds Creek within Sturt Park was observed to be in moderate to poor condition during the field survey. The banks of the eastern extent of the creek were relatively flat and the channel was approximately 1.5 m wide. At the downstream end of The Ponds Creek within the study area, near where it flowed under Kissing Point Road, the banks of the channel were steeper at an approximately 45-degree angle. Evidence of algae on the surface of the channel was noted and the water appeared stagnant in areas where the grade of the channel was quite low. The channel was partially shaded at the time of inspection and the riparian vegetation was limited in most areas to a few canopy species and very little, if any, groundcovers. Some large woody debris was observed within the channel (Figure 7), which would provide habitat to any aquatic fauna. Areas of bank erosion were also noted where the proposed bank stabilisation works are to take place.

Figure 7: Example of large woody debris within Ponds Creek

Figure 8: Mapped watercourses within the study areas

3.3.2 Impact Assessment

If landscaping is proposed, it is recommended that landscaping comprises native species known to occur within Blue Gum High Forest vegetation. This recommendation will result in an improvement in condition of the remnant Blue Gum High Forest adjacent to the study area.

There is a low potential for general disturbance to remnant Blue Gum High Forest trees during construction. This will can be managed to a low probability of occurrence with recommended mitigation measures such as fencing outlined below.

Where armouring of the creek bank is proposed within Sturt Park, excavation within the creek line is likely to be required to allow for sandstone bricks to be keyed into the toe to ensure ongoing stability of this area. The use of an excavator within the creek line can cause future erosion and sedimentation of the waterway if areas of creek bed and bank instability are created and not stabilised at the completion of the works and degradation of the water quality if sediment is mobilised during these works.

Excavation of the creek bed and banks could potentially impact areas of aquatic habitat within the channel, however it is likely that this impact would be minor, as an inspection of the creek line identified poor aquatic habitat within The Ponds Creek.

As part of the installation of the sandstone bricks, there would be the need to ensure that the immediate works area is dry to allow machinery to move freely within the area as well as to prevent waste material and dust entering the water. This would require dewatering of a section of Ponds Creek, which would temporarily block fish passage through the watercourse.

The installation of the sandstone bricks on the creek edge have the potential to narrow the width of the existing channel if they are not installed appropriately or consideration of bank full flows is not incorporated into proposed works.

Mitigation measures have been provided in Section 5 to decrease the risk of adverse impacts on the Ponds Creek.

3.4 Biodiversity

3.4.1 Existing Environment

3.4.1.1 Vegetation Communities

A review of the available Sydney Metropolitan Catchment Management Authority vegetation mapping (SMCMA, 2016) indicated that Urban Exotic/Native vegetation has been mapped within Acacia Park and Sydney Turpentine Ironbark Forest and Urban Exotic/Native vegetation has been mapped within Sturt Park (Figure 13).

ACACIA PARK

Field survey confirmed the presence of both planted natives and exotic species within Acacia Park (Figure 14).

Planted Natives (Exotic Understorey)

Native and exotic trees and shrubs exist as planted stands around Acacia Park and includes *Eucalyptus microcorys* (Tallowwood), *Corymbia maculata* (Spotted Gum), *Grevillea* sp., *Lomandra longifolia* (Spiny-headed Mat-rush), *Melia azedarach* (White cedar), *Plumeria* sp., (Frangipani), *Grevillea robusta* (Silky oak) which a mulched understorey (Figure 9).

Exotic

The majority of the site is a mown, grassed oval which contains exotic grass and weeds including *Cynodon dactylon* (Couch), *Modiola caroliniana* (Red-flowered Mallow), *Hypochaeris radicata* (Catsear), *Sonchus oleraceus* (Common Sowthistle), *Solanum nigrum* (Black-berry Nightshade), *Plantago lanceolata* (Lamb's Tongues), and *Lysimachia arvensis* (Scarlet Pimpernel) (Figure 10).

STURT PARK

Field survey confirmed the presence of one threatened ecological community, Blue Gum High forest, native plantings and exotic species (Figure 15).

Blue Gum High Forest in the Sydney Basin Bioregion (Planted with Exotic Understorey)

Broadscale vegetation mapping produced by the Sydney Metro Catchment Management Authority in 2016 (SMCMA 2016) identified *Sydney Turpentine Ironbark Forest* in the south and east portion of Sturt Park and Urban Exotic/Native to the north. The site has been historically cleared and modified and as such the majority of the vegetation on site has been re-planted with native species. The Sydney Turpentine Ironbark Forest originally mapped within the site was validated as Blue Gum High Forest with an exotic understorey along the riparian corridor and as larger, mature *Eucalyptus saligna* (Sydney Blue Gum) in the north and west portion of the site.

Stands of large remnant *E. saligna* exist in the west portion of Sturt Park and contain large hollows for fauna. Stands of remnant, isolated *E. saligna* have no midstorey and an exotic grass understorey. The Blue Gum High Forest identified along the riparian corridor of the site consists of *Eucalyptus saligna* (Sydney Blue Gum), *Angophora costata* (Smooth-barked Apple), *Ficus* sp., *Eucalyptus grandis* (Flooded Gum), *Eucalyptus punctata* (Grey Gum), and *Eucalyptus pilularis* (Blackbutt), *Syncarpia glomulifera* (Turpentine) and *Lophostemon confertus* (Brush Box) (Figure 12). A native midstorey is sparse, however

contained *Acacia implexa* (Hickory Wattle), *Acacia decurrens* and *Melia azedarach* (White Cedar). Along the riparian corridor *Melaleuca armillaris* (Bracelet Honey-myrtle) and *Allocasuarina torulosa* (Forest Oak), become more dominant. The understorey at the base of trees contains exotic species. Exotics in the groundcover includes *Ehrharta erecta*, (Panic Veldtgrass), *Tradescantia fluminensis* (Trad), *Plantago lanceolata* (Lamb's Tongues), and *Cenchrus clandestinus* (Kikuyu Grass). The groundcover is managed and mowed and, in some areas, closer to the riparian corridor the soil is bare or contains evidence of old mulch.

Blue Gum High Forest is a critically endangered ecological community (CEEC) listed under the NSW BC Act and the Commonwealth EPBC Act. The definition under the BC Act is very broad and includes remnant trees, but the definition under the EPBC Act is much narrower and vegetation must meet minimum condition and patch size thresholds to meet the EPBC Act definition. The criteria is as follows:

The patch size must be greater than one hectare in size and:

- have a canopy cover greater than 10%; or
- have a canopy cover less than 10% and occur in areas of native vegetation in excess of five hectares.

The Blue Gum High Forest within the study area has a canopy cover of 10% and is just below the 1 ha threshold for its listing under the EPBC Act. Taking a conservative approach, Blue Gum High Forest on site is considered to meet the EPBC Act definition. Therefore, any impacts to this community will be assessed under the EPBC Act.

Native Planted (Exotic Understorey)

The remainder of the native vegetation on site has been mapped as native planted vegetation and consists of planted *Eucalyptus sideroxylon* (Red Ironbark), *Eucalyptus microcorys* (Tallowwood), *Angophora bakeri* (Narrow-leaved Apple), *Melaleuca* spp., *Lomandra longifolia* (Spiny-headed Mat Rush) and *Corymbia maculata* (Spotted Gum) (Figure 11).

Exotic

Exotic species such as *Privet* spp. *Senna pendula* (Senna), *Salix* sp. (Willow) also exist along riparian corridor along with planted *Allocasuarina* sp. and *Melaleuca* spp.

Exotic Grassland

The cleared, mown areas of the park include exotic grass and weeds including *Cynodon dactylon (*Couch), *Pennisetum clandestinum* (Kikuyu grass), *Modiola caroliniana* (Red-flowered Mallow), Hypochaeris radicata (Catsear), *Plantago lanceolata* (Lamb's Tongues), and *Lysimachia arvensis* (Scarlet Pimpernel).

Cleared/ Built

The remainder of the site has been mapped as cleared/built and is made up of the existing pathways, buildings, skate ramp and play equipment.

Figure 9: Planted *Corymbia maculata* (Spotted Gum) and *Eucalyptus microcorys* (Tallowwood) within Acacia Park.

Figure 10: Exotic grasses within Acacia Park.

Figure 11: Planted native vegetation with mown, exotic understorey within Sturt Park

Figure 12: Blue Gum High Forest along the riparian corridor of The Ponds Creek within Sturt Park

Figure 13: Previous vegetation mapping of the study areas.

Figure 14: ELA validated vegetation communities Acacia Park

Figure 15 ELA validated vegetation communities Sturt Park

3.4.1.2 Priority weeds and Weeds of National Significance (WoNS)

One Priority Weed listed under the NSW *Biosecurity Act 2015*, and six weeds of regional concern outlined in the Greater Sydney Regional Strategic Weed Management Plan 2017 - 2022 (LLS 2017) were identified in the study area, which includes one Weed of National Significance (WoNS). The priority weeds present, their management class and their status as a WoNS is provided in Table 2 below.

Table 2: Priority weeds and WoNS recorded at Acacia and Sturt Park

Scientific Name	Common Name	WoNS	Priority Weed Objective or Asset at Risk
State Priority Weeds			
Asparagus asparagoides	Bridal Creeper	Yes	Asset protection[1]
Weeds of Regional Concern			
Araujia sericifera	Moth Vine	No	Environment[2]
Cenchrus clandestinus	Kikuyu	No	Environment[2]
Eragrostis curvula	African Lovegrass	No	Environment[2]
Ligustrum lucidum	Broad-leaf Privet	No	Environment, Human Health[2]
Ligustrum sinense	Small-leaf Privet	No	Environment, Human Health[2]
Tradescantia fluminensis	Trad	No	Environment[2]

[1] Mandatory measure (Whole of NSW)

[2] Regional Strategic Response

3.4.1.3 Threatened Ecological Communities, Flora, Fauna and Migratory Species

A review of the BioNet Atlas and EPBC Act protected matters search tool identified eight threatened ecological communities, 27 threatened flora and 56 threatened fauna (including migratory species) either known or considered likely to occur within 5 km to Acacia and Sturt Park. Atlas records which have been recorded in close proximity to the parks is displayed in (Figure 16).

Many of the threatened flora and fauna species excluded from further consideration are purely marine (e.g. fish and marine mammals) or estuarine to shoreline (e.g. waders) species that are not capable of utilising the site or study area, and thus are not likely to be affected by the proposed works.

Threatened Flora

No threatened flora species were recorded within the proposed impact areas at Acacia and Sturt Park. Additionally, no habitat was identified for threatened flora species within the proposed impact areas.

Threatened Fauna

No threatened fauna species were identified within the study area. Vegetation within the study area is likely to provide suitable habitat for a number of common peri-urban species and potential habitat for threatened fauna species. The habitat features relevant to each guild of fauna species are identified in Table 3.

Table 3: Habitat features and associated fauna groups (guilds) recorded within the study area

Habitat Features	Guild	Acacia Park	Sturt Park
Remnant vegetation	Birds, microchiropteran bats (microbats), megachiropteran bats (fruit bats), arboreal mammals, reptiles	Absent	Present
Winter flowering species	Winter migratory birds, arboreal mammals and megachiropteran bats (fruit bats)	Limited	Present
Hollow-bearing trees (HBT)	Birds and arboreal mammals (gliders and microbats)	Absent	Present
Stags	Birds, particularly birds of prey, reptiles, amphibians, micro bats	Absent	Absent
Leaf Litter	Reptiles, amphibians, invertebrates	Absent	Limited
Coarse woody debris	Terrestrial mammals, reptiles, invertebrates	Absent	Limited
Drainage lines and Dams	Amphibians, reptiles, water birds and microbats	Absent	Present –Ponds Creek
Rocks/ Rocky Outcrops	Reptiles, invertebrates, terrestrial mammals	Absent	Absent
Vegetative corridor	Birds, reptiles, arboreal and small mammals	Limited	Present, connected along Ponds Creek riparian corridor
Mistletoe	Birds and arboreal mammals	Absent	Absent
Native/ Exotic grassland	Migratory wetland birds (Egrets), predator bird species (Little Eagle) and microbats	Present	Present

Figure 16: Threatened flora and fauna BioNet Atlas records in proximity to the study areas.

3.4.2 Impact Assessment

3.4.2.1 Direct Impacts

The proposed works are likely to result in the removal of groundcover / mid-storey species through under scrubbing vegetation as well as the trimming of canopy species.

3.4.2.2 Removal of Native Vegetation

The works will result in the removal of 0.06 ha of Blue Gum High Forest with an exotic understorey, 0.12 ha of Native Planted vegetation with an exotic understorey and 0.8 ha of exotic vegetation from the study areas (Table 4).

Removal of vegetation to allow for installation of sandstone boulders/logs on the creek bank may increase the susceptibility of the creek bank to erosion. Vegetation (including exotic species) can act as stabilisers of creek banks as the roots of this vegetation act as soil binders. This could lead to sedimentation within the waterbody, as bank stability is reduced. This may increase the turbidity of the water within the creek line and limit the amount of sunlight reaching the water and any aquatic fauna and flora.

Table 4: Impact areas

Vegetation Community	Condition	BC Act	EPBC Act	Area (ha)	Impact area (ha)	Local occurrence (ha)	Removal of local occurrence [1](%)
Acacia Park							
Native Planted (exotic understorey)	N/A	N/A	N/A	0.45	0.04	N/A	N/A
Exotic	N/A	N/A	N/A	1.14	0.57	N/A	N/A
			TOTAL	**1.59**	**0.61**	-	-
Sturt Park							
Blue Gum High Forest in the Sydney Basin Bioregion	Planted, exotic understorey	CEEC[2]	CEEC	1.0	0.06	13.2	0.4%
Planted Native (exotic understorey)	N/A	N/A	N/A	0.65	0.08	N/A	N/A
Exotic	N/A	N/A	N/A	0.10	0.001	N/A	N/A
Exotic Grassland	N/A	N/A	N/A	1.16	0.27	N/A	N/A
			TOTAL	**2.91**	**0.41**		
			TOTAL NATIVE VEGETATION	**3.24**	**0.18**		
			GRAND TOTAL	**4.5**	**1.02**		

[1] local occurrence has been determined by a 1500m buffer to Sturt Park and includes those areas of vegetation where the exchange of genetic material is possible by the movement of highly mobile vectors such as birds and bats.

[2] CEEC = Critically Endangered Ecological Community

3.4.3 Impact to Threatened Entities

In terms of threatened fauna habitat, the vegetation in the study area to be impacted comprises of highly modified landscaped garden vegetation impacted by past disturbance, and represents only occasional, marginal seasonal foraging habitat for highly mobile threatened fauna species such as Grey-headed Flying-fox. As the Grey-headed Flying-fox is a highly mobile species, and the impact to foraging habitat for this species is marginal in comparison to the foraging habitat available in the wider locality further assessment under the BC and EPBC Act was not required.

3.5 Indirect Impacts

An assessment of indirect impacts has been included as part of the impact assessment. Potential indirect impacts may include:

- Increase in surface water runoff, sedimentation and nutrients during and following construction
- Increase in noise and disturbance to fauna inhabitants in adjacent vegetation
- Damage to native vegetation adjacent to the subject site.

Impacts associated with changed water runoff, increased sedimentation and increased nutrients during and following construction should be mitigated through preparation and implementation of an Erosion and Sediment Control Plan and appropriate controls on storage of chemicals.

Increases in noise and disturbance during construction to potential fauna inhabitants in adjacent vegetation is likely to be minimal, given the urban environment in which the study area is located and the availability of suitable habitat adjacent to the study area.

Vegetation within a 5 m construction buffer may be indirectly impacted through trampling, spoil placement and other activities associated with the construction.

3.6 Aboriginal Heritage

ELA completed an Aboriginal Due Diligence Assessment for the sites (2020), which detailed the existing environment and potential impacts of the proposed works on Aboriginal Heritage considerations within the area. The results of this assessment are summarised below.

3.6.1 Existing Environment

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was undertaken on 03 June 2020 covering GDA, Zone: 56, Eastings: 314886 - 323507, Northings: 6252383 - 6263076. The search parameters identified one hundred and twenty (120) Aboriginal sites as being within the search area, a breakdown of which is provided below (Table 5).

Table 5: AHIMS Search Results

Site Status	Site Features	Number	Percentage
Valid	Artefact	36	30
	Artefact Scatter	3	2.5
	Artefact; PAD	8	6.65
	Grinding Groove	1	0.84
	Midden	2	1.66
	Midden; Artefact Scatter	1	0.84
	Modified Tree	1	0.84
	Not a Site	6	5
	Potential Archaeological Deposit (PAD)	29	24.16
	Shelter with Art	3	2.5
	Shelter with Art; Shelter with Deposit	4	3.33
	Shelter with Deposit	15	12.5
Deleted	Artefact	1	0.84
Destroyed	PAD	9	7.5
	Artefact; PAD	1	0.84
	Total	**120**	**100%**

Two Aboriginal sites have previously been recorded within the study areas, one located within Acacia Park (AHIMS ID 45-6-2407) and one within Sturt Park (AHIMS ID 45-6-2569). Both sites were identified as being situated within a heavily disturbed context.

3.6.2 Impact Assessment

A visual inspection of the study area was undertaken by ELA Archaeologist Jennifer Norfolk on 12 June 2020. Visual inspection aimed to identify Aboriginal objects if present and assess the archaeological potential of the study area.

3.6.2.1 Acacia Park

The study area is located on a crest landform surrounded by residential buildings and roads dating from the 1950s. The landform slopes down toward the south and west. A children's playground is located in

the north east corner and several seats are scattered around the perimeter. A footpath runs east to west on the northern side, with a bus shelter located halfway. Scattered native and exotic trees are concentrated at the corners of the park and minor landscaping has been carried out at the southern end.

The original vegetation has been cleared from previous continuous land use, dating as early as 1791, and replaced with introduced grass and non-native shrubs. The trees are not remnant and are the result of plantings associated with Kishnaghur or more recent landscaping.

Visibility across the park was low, the majority of the surface is covered in well-manicured grass, localised ground exposures around the trees and near the roads showed heavily disturbed soils. A thin layer of loam was visible overlying an orange clay loam base with shale pieces and quartz gravels as well as introduced material.

As detailed in the site card, the area at the corner of Lord Avenue and Evans Road was investigated for artefacts, none were located and there was no visible evidence of shell, bone or charcoal. All exposed ground in this location was examined for evidence of AHIMS site 'Acacia Park' (AHIMS ID 45-6-2407). The area is heavily disturbed from previous land use, vegetation clearance, construction and excavation work for the adjacent roads and footpath. The surface was covered in shale gravels and blue stone gravel, it is possible the silcrete artefacts were mis-diagnosed or imported. This site is listed as 'valid', however, there is little potential for archaeological deposits to be located at this site.

Figure 17: View west across likely AHIMS site 'Acacia Park (AHIMS 45-6-2407)

Figure 18: Soil exposure at the possible location of AHIMS 45-6-2407, visible shale, gravel and introduced materials

Figure 19: View south along west boundary of park showing slope, trees and ground visibility.

Figure 20: View north along the middle of the park, showing the crest is well grassed and the play equipment is located in the north east corner.

Figure 21: View north west at the south boundary of the study area, showing road, slope, seating and residential housing.

Figure 22: View east along southern boundary of study area showing trees and grass cover.

3.6.2.2 Sturt Park

The study area is located on a sloping landform running north to south towards The Ponds Creek in the south. The park has an amenities block, a concrete skate park which has been excavated into the site, a children's playground with soft fall surface, bitumen basketball courts and picnic shelters. The

boundaries of the park include residential properties, roads and a children's day-care centre. Below ground services including electricity and water are also present.

The park is located on part of Robert Green's 100-acre land grant of 1838 known as Rock Farm. In 1887, most of the farmland was auctioned off as large 'villa' sites of five to nine acres and in 1900 properties were further subdivided. It is likely that none of the original vegetation has survived as much of the land was under cultivation prior to subdivision. There are several mature trees along the creek line, and these may be planted, regrowth or remnants of vegetation associated with Rock Farm. The remaining park has been landscaped with introduced grasses, shrubs and native trees. The creek line is bordered by she-oaks and smaller shrubbery.

Visibility across the study area was low, the majority of the surfaced is covered in well-manicured grass, and the remainder in concrete surfaces including paths, a skate bowl, courts and amenities. There were several ground exposures around the play equipment and around the base of trees. Sandstone outcropping is visible above the creek line and the bedrock is exposed adjacent to the creek line. The northern boundary of the study area showed disturbed soils and exposed sandstone, mixed shale gravels and clays. The exposures along the creek line shows thick alluvial deposits that are strewn with modern rubbish through the entire profile.

The creek line appears to have been heavily modified, a weir and large sandstone blocks have been installed to shore up the creek banks and direct the flow of water.

AHIMS site 'Sturt Street' (AHIMS ID 45-6-24569) located in the south of the study area, on the north bank of The Ponds Creek, was investigated for artefacts, none were located. The surface was covered in grass and although it is possible the silcrete artefacts were located at the site due to the proximity of the creek, the study area is heavily disturbed from previous farming practises, land clearance, recreational purposes and creek flooding and erosion. Due to the highly disturbed nature of the site it is unlikely the artefacts are *in situ* deposits. There is little potential for archaeological deposits to be located in the study area.

Stabilisation and formalisation of the creek embankment to some sections of Ponds Creek, Sturt Park will include regrading and compaction works to form a tiered drainage channel. Soils will be covered with jute mesh anchored with 400mm 'j' pins and sandstone blocks laid over the mesh. Native tubestock plantings will be introduced between stones.

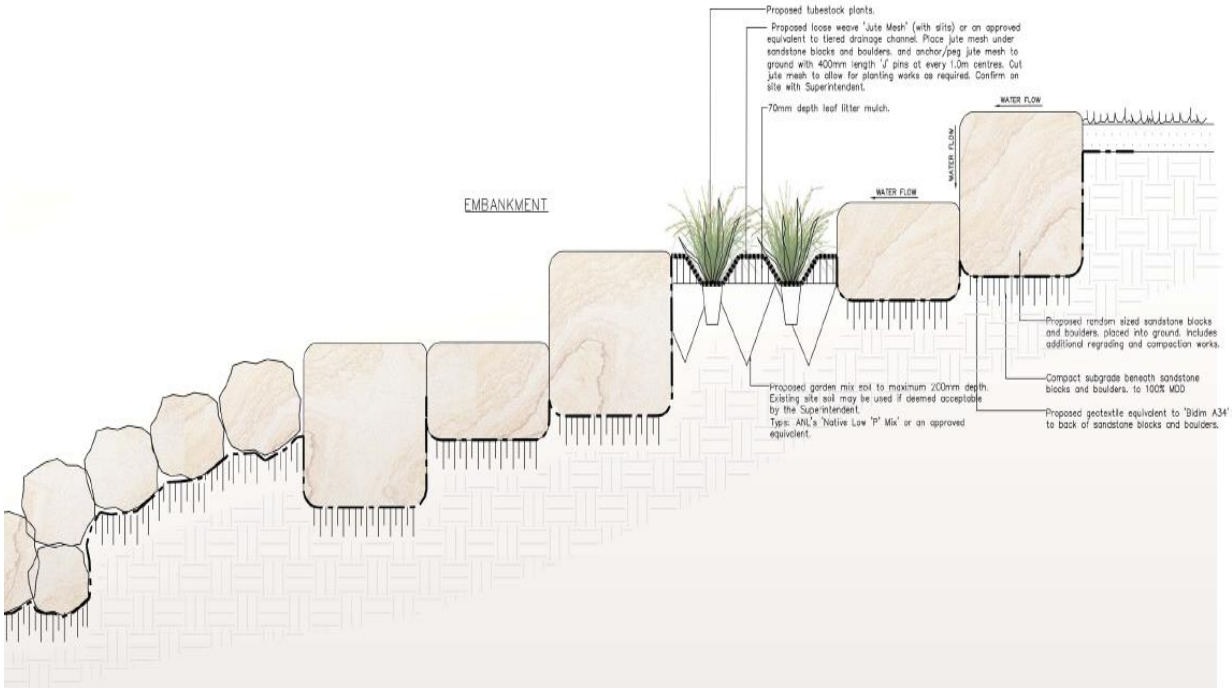


Figure 23 Stabilisation and formalisation of the creek embankment to some sections of Ponds Creek, Sturt Park (City of Parramatta Council)

Figure 24: View north along eastern boundary of park showing slope, visible soils and concrete bike track.

Figure 25: View west across AHIMS ID 45-6-2569, showing slope and dense grass cover.

Figure 26: View west above the creek line showing sandstone outcropping and grass cover.

Figure 27: View east showing mature trees, gravel path and vegetation.

Figure 28: View west along north boundary of study area showing courts and excavated slope.

Figure 29: View west from eastern boundary showing paths, BBQ facilities and toilets.

3.7 Historic Heritage

ELA was engaged to develop an Archaeological Assessment for the Acacia Park, which assessed the potential and significance of any archaeological resource that may exist on site. A summary of results is provided below.

3.7.1 Existing Environment

3.7.1.1 Acacia Park

Acacia Park is a 1.5-hectare rectangular park surrounded by post 1950 residential development. The park is part of a larger (50-acre) original grant to John Ramsay in 1791. The property was purchased by Captain Thomas Henry Baylis in 1836 who constructed the house known as Kishnaghur just below the highest point of the property in the same year. Kishnaghur appears to have been a timber house with extensive sandstone cellars, high ceilings, cedar doors and faced south overlooking a large circular driveway, now the southern side of Tilley Street. The property was used for agricultural and pastoral activities until the turn of the 20th century. Henry Walters bought the property 1911 and it was used for orcharding and agistment while the house was tenanted until the late 1930s when it was demolished. The sandstone cellars were not filled in immediately and remained an open feature in the landscape for many years. The Perpetual Trustees became proprietor of the property in 1946 on Walters death and much of the surrounding land was subdivided for housing.

Artificial mounding and several rectangular depressions are evident in the central and southern parts of the site likely to be associated with the cellars of Kishnaghur. There are also three areas that remain lush and green throughout periods of drought which are likely to represent a former dam or be below ground water storage.

A site survey was undertaken on 12 June 2020 by Jennifer Norfolk (ELA Archaeologist).

Figure 30: Playground in the north western corner of the park

Figure 31: Artificial mounding in the centre of the park

Figure 32: Rectangular slumping in the centre of the park

Figure 33: Rectangular slumping near Tilley Street

Figure 34: Slumping at location of the former Kishnaghur

Figure 35: Uneven ground in the southern portion of the park in the former location of Kishnaghur

Acacia Park is considered to have high historical archaeological potential. The park has high potential to contain the remains of the sandstone cellars of Kishnaghur as well as below ground remains of outbuildings and deep features such as wells/cisterns, cess pits and /or rubbish dumps. The levels of archaeological potential present on site are defined in Table 6 below.

Table 6: Archaeological potential within the study area

Phase	Archaeological remains	Potential
Ramsay Occupation	Occupation-related artefact deposits and structural features relating to clearing and the earliest phase of occupation by Ramsay	Low
Baylis and subsequent occupation	Below ground structural remains of Kishnaghur, at least one outbuilding	High
Baylis and subsequent occupation	Yard deposits, wells and cess pits, refuse dumps.	Moderate
Landscape features	Garden terracing, dam construction, remnant planting, paddock layout, fencing and circular driveway.	Low to Moderate
Farming	Land clearing, agricultural remains and pastoral evidence.	Low

The northern third of Acacia Park which currently contains the playground, grassed area and trees is unlikely to contain an archaeological resource as historical imagery from 1943 demonstrates that the area contained only ploughed fields with no evidence of structures, tracks, land modification or trees.

The southern two thirds of the park contain the remains of Kishnaghur, particularly its cellars, outbuildings and water storage, as indicated in Figure 36.

Figure 36 Aerial image and areas archaeological potential within the study area

Different components of a place may contribute in different ways to its heritage value. New criteria were developed in 2009 to identify whether the archaeological resource is of Local or State significance. The potential archaeological remains of Kishnaghur are likely to be occupation-related artefact deposits, the remains of structural features relating to the cellars, the main house and other structures on the site. The following table lists the potential archaeological remains and their assessed significance.

Table 7: significance of potential archaeological remains on site

Phase	Archaeological remains	Significance
Ramsay Occupation	Occupation-related artefact deposits and structural features relating to clearing and the earliest phase of occupation by Ramsay is early and rare	State
Baylis occupation	Below ground structural remains of Kishnaghur, at least one outbuilding may have the ability to yield new information that will contribute to an understanding of the development of the area and its associations with Baylis	Local/State
Baylis occupation	Yard deposits, wells and cess pits, refuse dumps from early phases of occupation has the ability to yield new information that will contribute to an understanding of the development of the area and its associations with Baylis.	Local/State
Landscape features	Garden terracing, dam construction, remnant planting, paddock layout, fencing and circular driveway.	Local
Farming	Land clearing, agricultural remains and pastoral evidence.	Local

3.7.1.2 Sturt Park

No heritage items listed on the Australian Heritage Database, State Heritage Register / State Heritage Inventory or Parramatta LEP 2011 exist within or near the study area in Sturt Park.

3.7.2 Impact Assessment

3.7.2.1 Acacia Park

The following assessment of significance is sourced from the State Heritage Inventory.

> Kishnaghur archaeological site, on the corner of Tilley and Osborne Streets in Dundas Valley, is of significance for the people of Parramatta for historical reasons, for its associations with Captain Thomas Baylis, and for its archaeological research potential. The site and grounds may retain evidence of the former use and contribute further to the understanding of the history of the area.

The archaeological resource remaining in the park would have Historic Significance (Criterion a) – as one of the earliest land grants in the colony and as a property that functioned as an agricultural and pastoral property until its subdivision in the late 1940s.

The archaeological resource remaining in the park may have Associative Significance (Criterion b) – for its association with Captain Baylis who built Kishnaghur.

The archaeological resource remaining in the park is likely to have Scientific/Technical Significance (Criterion e) for its research potential and ability to yield new information that will contribute to an understanding of NSW's cultural or natural history, or the local area.

The archaeological resource remaining in the park dates to 1836 and possibly earlier. Archaeological sites such as this are rare (Criterion f) and may contain uncommon aspects of NSW's cultural or natural history, or the local area.

The archaeological resource remaining in the park may display the principal characteristics of early farm buildings and site lay out (Criterion g).

Construction of the proposal at current ground levels are likely to impact most of the archaeological resource remaining in the park. The potential and significance of the archaeological resource remaining in Acacia Park is a major constraint to the current concept design. Three potential options were provided to Council as follows;

- Redesign the concept plan to avoid the potential archaeology, possibly losing the lookout to the Paramatta CBD.
- Retain the current concept design and raise the level of the ground in the location of the identified features to the depth required for construction (i.e. if path construction, installation of services or tree planting requires an excavation to a depth of 600 mm, then the ground level must be raised to at least that height to avoid impacts to the archaeological features).
- Modify the current concept plan and archaeologically excavate the site to expose below ground features and retain for interpretation. The archaeological remains are likely to be State Significant and the Heritage Council will not approve their removal. This may however result in an interesting outcome exposing and retaining archaeological features in the park that can be interpreted and promote the history and cultural significance of the local area.

Council confirmed that their preference is Option 2: Retain the current concept design and raise the level of the ground in the location of the identified features.

Prior to the proposal upgrades, the current levels of the park will require modification in the areas of high potential by raising the ground level where excavation over 200 mm is required, particularly in the southern portion of the site, to avoid impacting the archaeological remains of Kishnaghur and its outbuildings. If sufficiently covered by topsoil, the proposed works will not result in impacts to areas of high archaeological potential.

Raising the current ground level in the northern portion of the park at the location of the current play area is not necessary as it is unlikely to contain areas of archaeological potential. If footings, services and excavation deeper than 200 mm are required in areas with high archaeological potential, the existing ground must be raised to the required height to accommodate them.

3.7.2.2 Sturt Park

No impacts to areas of historical heritage significance are anticipated to result from the proposed works at Sturt Park.

Mitigation measures related to the heritage sensitivity of Acacia Park, and any unexpected finds are outlined in Section 5.

3.8 Noise and Vibration

3.8.1 Existing Environment

3.8.1.1 Sturt Park

Sturt Park is located in close proximity to a residential area and is bordered on the east south and west by residential housing. To the north of the site is the Telopea Public School. Existing noise sources in the vicinity include vehicle noise on the nearby Kissing Point Road and general activities associated with the school and residents.

3.8.1.2 Acacia Park

Like Sturt Park, Acacia Park is bounded on all sides by residential housing, with the sensitive receiver, 'Kingdom Hall of Jehovah's Witnesses' (place of worship) located less than 20 m northwest of the study area, across Evans Road. Existing noise sources in the area surrounding Acacia Park are also associated with general residential activities and sound from the nearby place of worship.

3.8.2 Impact Assessment

Potential exists for noise and vibration impacts during excavation and construction works for nearby residential receivers. These impacts will occur through the entire construction phase, therefore the mitigation measures in section 5 of this REF must be strictly adhered to in order to ensure disruption is minimised. It is also recommended that nearby landowners are consulted prior to commencement to the works.

As the works will be undertaken within proximity to two sensitive receivers; 'Telopea Public School' and Kingdom Hall of Jehovah's Witnesses', it is recommended that notification is given at least 2 weeks prior to works commencement, and a complaints register be maintained prior to and during all construction activities.

Work hours will be in accordance with the Interim Construction Noise Guideline (DECC, 2009) detailed below which will minimise impacts to residents in proximity to the works:

- Monday to Friday 7.00am to 6.00pm
- Saturday 8.00am to 1.00pm
- No work on Sunday or public holidays

During operation, the increased utilisation of the parks will contribute to local noise due to the noise associated with sporting events and increased vehicle movements to and from the site.

There will be minor noise and vibration impact to sensitive receivers during operation. However, these impacts will typically be associated with low-key recreational activities for groups of residents who live within the surrounding area. If the parks are to be used for sporting events in the future, noise impacts from these events may be managed at Council's discretion.

3.9 Air Quality

3.9.1 Impact Assessment

Minor dust emissions are predicted as part of the construction phase of proposed works. The study area is within an urban area of Sydney, therefore there is potential for impacts to residents to occur. Dust emissions may also impact native fauna within the study area.

Community consultation should be undertaken prior to excavation and vegetation management works. While these works are not anticipated to create excessive amounts of air pollution, there is potential for adverse impacts to be experienced by the surrounding sensitive receivers, as both sites are bounded by residential receivers on all sides.

During operation, the increased number of vehicle movements within the area will contribute to emissions, though this is not anticipated to be to a significant extent as there are already roads which are heavily used in the surrounding areas and vehicles will not be running for the majority of the time they are visiting.

The anticipated impact on nearby receivers and fauna species in proximity is low, considering that the proposed construction works will be temporary and will not create excessive dust. Mitigation measures are proposed below in Section 5 to minimise impacts further.

3.10 Waste Management

3.10.1 Impact Assessment

The majority of waste generation is likely in the form of removed vegetation and excavated material due to earthworks. Additional waste may be generated as products of machinery use and general waste from workers. Proposed impacts of waste generation include:

- reduced aesthetics in community areas;
- minor spills from hazardous fuel and chemical use; and
- pollution of the environment from other general wastes.

Any excess spoil from earthworks is proposed to be classified in accordance with Waste Classification guidelines (EPA, 2014) and disposed of at an appropriately licenced waste facility. No waste is to be imported into the site.

Removal and appropriate disposal of general waste generated by the contractors during the proposed works is the responsibility of the contractors unless advised otherwise by CoP.

During operation, waste bins should be positioned at accessible locations to encourage users and visitors to dispose of rubbish easily and appropriately.

3.11 Traffic

3.11.1 Impact Assessment

The proposed works will be accessed by the existing public road network. Access for heavy machinery transport will also be via the public road network. The works will not require the closure of any existing roads.

The number of vehicle movements to and from the site, associated with the transportation of personnel and the removal of waste will be vary depending on the stage of the project. Due to the low level of road use surrounding the subject site, the impacts to traffic flow and pedestrian movement is anticipated to be relatively low. If any road closures are required, a Traffic Management Plan may need implementation.

During operation, traffic to and from site has the potential to increase, though these impacts will predominantly be felt during council approved events. However, the impact of this is anticipated to be partially mitigated by the new line marking, which will delineate extra car spaces.

Mitigation measures are discussed in Section 5 below.

3.12 Visual Amenity and Landscape

3.12.1 Impact Assessment

The proposed works will alter the visual landscape and amenity of both areas as they involve the erection of infrastructure associated with recreational use and amenity buildings. Additionally, the proposed 3.3 m high viewing mound will be the highest structure in Acacia Park, however due to its central location within the park, and size relative to other proposed works it is unlikely that views of the park will be greatly obstructed for residents within housing surrounding the park.

As the works will facilitate a long-term higher amenity public recreation area, the visual impact on the community is anticipated to be positive and will better reflect the increased housing densities in the surrounding area. The viewing mound within Acacia Park will also capitalise on the elevated location and enable park visitors to have an unobstructed view of the Parramatta CBD, which is currently not possible due to the current topography and the level of development which surrounds the site.

In order to ensure that the visual impact of lighting on surrounding residents is minimised, operational hours may be put in place by council and agreed upon through community consultation. By ensuring that lights are switched off or dimmed outside operational hours, the visual impacts from lighting will be minimal beyond typical usage periods. This lighting will, however, improve visitor safety and if any permanently operational lighting is erected, it should be designed to provide a safe path of travel and discourage lingering to minimise the impact on light pollution to surrounding properties.

The restoration works which will take place in Sturt Park will also improve the visual amenity of the area, as they will be designed to remove weed and pest species from the area and allow for native vegetation regrowth whilst improving site permeability and passive surveillance. The associated formalisation of pathways will improve accessibility throughout the park and increase opportunities for the community to experience and appreciate these values.

Mitigation measures are proposed in Section 5 to help ensure that the visual landscape of the area is impacted positively in the long term.

3.13 Socio-Economic Considerations

The overarching aim of the proposed works is to provide usable public assets for the community. As the greater diversity of facilities will allow for increased community engagement, it is anticipated that the works will have positive social and economic impacts on the surrounding area through increased visitation, and public engagement that will generate additional demand for local businesses.

Construction contractors and materials should be sourced from local businesses where possible, to create further positive impacts to the local economy.

The formalisation of walking tracks and new recreational infrastructure will also help to encourage an active lifestyle for members of the local community, and the inclusion of safety and pedestrian lighting will improve visitor safety.

An engagement report was developed by KJA (2019), which outlined the community consultation strategies undertaken for the future of Sturt and Acacia Parks. A number of recurring comments and themes were reached through community feedback and present opportunities for the improvement of local socio-economic outcomes through the proposed upgrades. A summary of the feedback is provided below.

3.13.1 Sturt Park

Facilities

- 76% of online survey respondents reported using the playground in the current park, and a similar number of respondents reported that they would use the park more if the playground was upgraded or play equipment was installed that catered to broader user groups.
- Toilets were a hot topic for the community, with calls to have them opened more regularly and for the building to be made to feel safer. Exterior taps change facilities and accessible toilets were also requested.
- The basketball and skate park are well loved and used, with the community broadly supportive of minor upgrades to both areas.
- An upgraded ponds walk, bubblers, shade cloths, better seating all garnered support from the community

Safety and Security

- The current park does not make all users feel safe, with half of online survey respondents requesting better sightlines to improve passive surveillance from the street.
- Better lighting was a common request, however the community also desired initiatives to discourage anti-social behaviour. Feedback ostensibly suggested this would boost usage of the park.

Community Connections

- Participants wanted the park to improve connections in the Telopea community: Through youth events, festivals, gatherings around sports (from Tai Chi to Basketball) and other hobbies.

3.13.2 Acacia Park

Survey participants did not request major changes to the facilities or usage-type of this park. The fenced playground is appreciated by parents of younger children, who left many requests for upgraded play equipment, with a common thread of feedback being that the playground was too tall for young children. Suggestions to improve the park revolved around these family connections, with respondents requesting BBQ, seating and shade facilities.

An opportunity to improve usage of the park through improved wayfinding and signage was also discovered through the undertaking of community survey and engagement events.

Overall, it is assumed that the works will vastly improve socio-economic considerations for both parks.

3.14 Cumulative Impacts

In accordance with clause 228 of the EP&A Regulation, any cumulative environmental effects of the project associated with other existing and likely future activities must be taken into account in determining the potential impacts of the project on the environment.

The works will be carried out in a public recreation area and will be undertaken to further enhance the existing use of this space. Therefore, the land use will not change, and minimal cumulative environmental impacts are likely to result from the works.

3.15 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, the following Matters of National Environmental Significance (MNES) and impacts on Commonwealth land are required to be considered to assist in determining whether the project should be referred to the Australian Government Department of the Environment. Table 8 addresses the MNES for the project.

Table 8 Consideration of Matters of National Environmental Significance

MNES	Impact
Any environmental impact on a World Heritage property?	No
Any environmental impact on National heritage places?	No
Any environmental impact on RAMSAR wetlands?	No
Any environmental impact on Commonwealth listed threatened species or ecological communities?	Non-significant impact
Any environmental impact on Commonwealth listed migratory species?	No
Does any part of the project involve nuclear action?	No
Any environmental impact on a Commonwealth marine area?	No
Any impact on Commonwealth land?	No

3.16 Clause 228 of the Environmental Planning and Assessment Regulation

Clause 228 of the EP&A Regulation sets out 16 factors that need to be considered when assessing environmental impact under Part 5 of the EP&A Act. These factors are addressed in this report and relevant sections are listed in Table 9 below.

Table 9 Clause 228 Factors

Clause 228 Factors		Impact
(a)	Any Environmental Impact on a Community?	Noise and other impacts on the community are anticipated to exist during the construction works. The appropriate work hours and mitigation measures must be adhered to in order to ensure that the impacts to the community are minimised as the works are in close proximity to sensitive receivers. The works will provide an overall positive outcome for the local community, as the parks will be further enhanced as recreational areas and their overall amenity will be improved.
(b)	Any transformation of a locality?	The works will infer a positive impact on the visual amenity of the area as vegetation removal will be minimal, and the works will improve the overall identity of the parks as locations for recreational activities to occur. The works will predominantly be undertaken within land that has been cleared and altered for the existing parks, and restoration works within Sturt Park will aim to reduce the occurrence of harmful weed species and improve the integrity of native vegetation within riparian zones. The formalisation of walking tracks will also enable increased appreciation of the natural environment.
(c)	Any environmental impact on the ecosystems of the locality?	Impacts on ecosystems are anticipated to be non-significant if the recommended mitigation measures are followed.
(d)	Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	The works will confer a positive impact on the recreational and aesthetic quality of the locality. They are consistent with the existing land use and where significant excavation is required, should not reduce the scientific or environmental quality of the locality.
(e)	Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	Impacts on Aboriginal cultural heritage items are anticipated to be non-significant if the recommended mitigation measures are followed. Acacia Park is considered to have high historical archaeological potential. The park has high potential to contain the remains of the sandstone cellars of Kishnaghur as well as below ground remains of outbuildings and deep features such as wells/cisterns, cess pits and /or rubbish dumps. Prior to the proposal upgrades, the current levels of the park will require modification in the areas of high potential by raising the ground level, particularly in the southern portion of the site, to avoid impacting the archaeological remains of Kishnaghur and its outbuildings. If sufficiently covered by topsoil, the proposed works will not result in impacts to areas of high archaeological potential.
(f)	Any impact on the habitat of protected fauna (within the meaning of the *Biodiversity Conservation Act 2016*)?	The impact assessment on threatened fauna is minimal and will not be significant. In addition, the impact resulting from the loss of general fauna habitat as a result of vegetation disturbance is not likely to result in the loss or reduction in the viability of more common fauna species.

Clause 228 Factors		Impact
(g)	Any endangering of any species of animal, plant or other form of life whether living on land, in water or in the air?	Potential impacts on flora and fauna have been considered as part of this REF. There will be no significant impact on any threatened species or other more common fauna species.
(h)	Any long-term effects on the environment?	The works will have a long-term positive impact on the community through increased visitor amenity. No long-term adverse environmental impacts are anticipated if the mitigation measures are adhered to.
(i)	Any degradation of the quality of the environment?	No significant impacts to the quality of the environment are likely. No degradation to the quality of the environment should occur if mitigation measures are adhered to.
(j)	Any risk to the safety of the environment?	A temporary low risk to the environment is associated with the works. Potential for a small chemical spill (e.g. petrol or oil) or sedimentation to occur during the works. The risk to the environment is temporary and considered minimal if the prescribed mitigation measures are adopted.
(k)	Any reduction in the range of beneficial uses of the environment?	No reduction in the range of beneficial uses of the environment will result as part of the works due to them being an enhancement of the existing land use within the area.
(l)	Any pollution of the environment?	No pollution of the environment is likely. The risk is minimal and temporary if the appropriate mitigation measures are followed.
(m)	Any environmental problems associated with the disposal of waste?	All general waste is to be taken offsite and disposed of appropriately.
(n)	Any increased demands on resources (natural or otherwise) that are or are likely to become in short supply?	No resources that are being utilised as part of this project are likely to become in short supply.
(o)	Any cumulative environmental effect with other existing or likely future activities?	Minimal cumulative environmental effect is likely as a result of the works.
(p)	Any impact on coastal processes and coastal hazards, including those under projected climate change conditions?	There are no impacts on coastal processes or hazards that will result as part of the works.

4. Consultation

Division 1 of the Infrastructure SEPP provides guidance on consultation with stakeholders.

Table 10 Infrastructure SEPP consultation requirements

ISEPP Clause	Clause Relevance	Consultation Undertaken
Clause 13	Impacts on council-related infrastructure or services Consultation is required if the public authority is of the opinion that the development: (a) will have a substantial impact on stormwater management services provided by a council, or (b) is likely to generate traffic to an extent that will strain the capacity of the road system in a local government area, or (c) involves connection to, and a substantial impact on the capacity of, any part of a sewerage system owned by a council, or (d) involves connection to, and use of a substantial volume of water from, any part of a water supply system owned by a council, or (e) involves the installation of a temporary structure on, or the enclosing of, a public place that is under a council's management or control that is likely to cause a disruption to pedestrian or vehicular traffic that is not minor or inconsequential, or (f) involves excavation that is not minor or inconsequential of the surface of, or a footpath adjacent to, a road for which a council is the roads authority under the Roads Act 1993 (if the public authority that is carrying out the development, or on whose behalf it is being carried out, is not responsible for the maintenance of the road or footpath).	No, CoP is the proponent.
Clause 14	Impacts on local heritage Consultation is required if the development: (a) is likely to have an impact that is not minor or inconsequential on a local heritage item (other than a local heritage item that is also a State heritage item) or a heritage conservation area, and (b) is development that this Policy provides may be carried out without consent.	Prior to the proposal upgrades, the current levels of the park will require modification in the areas of high potential by raising the ground level where significant excavation is required, particularly in the southern portion of the site, to avoid impacting the archaeological remains of Kishnaghur and its outbuildings. If sufficiently covered by topsoil, the proposed works will not result in impacts to areas of high archaeological potential.
Clause 15	Impacts on flood liable land In this clause, flood liable land means land that is susceptible to flooding by the probable maximum flood event, identified in accordance with the principles set out in the manual entitled Floodplain Development Manual: the management of flood liable land published by the New South Wales Government and as in force from time to time.	The site is not mapped as flood liable land. CoP is the proponent.

ISEPP Clause	Clause Relevance	Consultation Undertaken
Clause 16	Consultation with public authorities other than councils Consultation is required if the development is: (a) development adjacent to land reserved under the National Parks and Wildlife Act 1974—the Department of Environment and Climate Change, (b) development adjacent to a marine park declared under the Marine Parks Act 1997—the Marine Parks Authority, (c) development adjacent to an aquatic reserve declared under the Fisheries Management Act 1994—the Department of Environment and Climate Change, (d) development in the foreshore area within the meaning of the Sydney Harbour Foreshore Authority Act 1998—the Sydney Harbour Foreshore Authority, (e) development comprising a fixed or floating structure in or over navigable waters—the Maritime Authority of NSW, (f) development for the purposes of an educational establishment, health services facility, correctional centre or group home, or for residential purposes, in an area that is bush fire prone land (as defined by the Act)—the NSW Rural Fire Service. Note. The Act defines bush fire prone land, in relation to an area, as land recorded for the time being as bush fire prone land on a map certified as referred to in section 146 (2) of the Act. Note. When carrying out development of a kind referred to in paragraph (f), consideration should be given to the publication of the NSW Rural Fire Service Planning for Bush Fire Protection 2006. (g) (Repealed)	Consultation with public authorities other than Council under this Clause was not deemed necessary.

As works are proposed within Ponds Creek within Sturt Park, DPI - Crown Lands should be consulted prior to works commencement as they manage the associated land.

5. Mitigation Measures

Table 11 Recommended mitigation measures for the proposed works

Impact On	Reasons	Safeguards/Mitigation Measures	Responsibility
Soil Erosion and Sedimentation	• Removal of existing vegetation and sedimentation caused by erosion and runoff from the site caused by vehicle movements and/or heavy rainfall. • Restoration works in proximity to waterways • Piling for foundation works	• Prepare a Construction Environmental Management Plan (CEMP) for approval by CoP prior to any construction works to address measures to be adopted to minimise impacts on the environment as a result of the construction works. • Develop and implement an Erosion and Sediment Control Plan for the proposed works, in accordance with the Blue Book (Landcom, 2004). The Erosion and Sediment Control Plan should control sediment and stormwater runoff within the work site and prevent detrimental impacts from occurring in the area of adjoining Blue Gum High Forest. The Erosion and Sediment Control Plan should also identify locations for any stockpiles, and vehicle areas, and appropriate controls for these and have the aim of achieving an outcome of 'no visible turbid plumes migrating through the waterway'. The Plan must include, but not be limited to: ○ Locations and type of instream sediment controls to be erected downstream of the bank stabilisation works. These can be constructed from hay bales or sandbags and lined with geofabric; however, they must be secured in the channel to ensure they do not mobilise. ○ Prior to forecast heavy rain, work in the creek is to cease, accumulated material is to be removed from within the instream sediment controls and then these are to be removed from the waterway to prevent them from being mobilised and causing a flood hazard or other environmental damage downstream. ○ Works area within the stream should be dewatered prior to works commencing to reduce likelihood of sediment entering the waterway. • Install erosion controls where excavation is to occur, particularly on slopes • Inspect erosion controls regularly (daily during workdays) and after rainfall. Fix damaged controls immediately. Remove accumulated sediment or waste material from within the sediment controls regularly. • Leave erosion controls in place until after the works are completed. • Schedule the work outside of predicted heavy rain periods. • Stop work during and after heavy rainfall to reduce risk of mobilising sediment. • Ensure that accumulated sediment is disposed of in accordance with EPA waste classification guidelines	Project Manager All Staff/Contractors

Impact On	Reasons	Safeguards/Mitigation Measures	Responsibility
		• Further testing should be undertaken to determine if ASS is present, and what construction materials should be used for deep pilings. • At all times, excavation equipment must be operated by experienced personnel, according to the manufacturer's specifications	
Soil Contamination	• Incidental discovery or disturbance of soil contamination. • Pollution of sediment from chemical spills (e.g. fuel or oil from machinery).	• If contaminated soils are uncovered during the works, all works within the vicinity of the find must cease immediately and CoP must be notified immediately. • For any excess spoil material which requires offsite disposal, formal waste classification will be required before being taken to an appropriately licensed landfill in accordance with the EPA (2014) Waste Classification Guidelines. • Store all chemicals (e.g. fuel, oil) in appropriate bunding/storage systems within the approved storage facility. • Ensure appropriate spill kits are carried with the equipment. • Dedicated refuelling areas are to be established outside of the riparian area and away from the creek line. These areas are to be bunded to ensure any spills do not enter the riparian vegetation areas.	Project Manager All Staff/Contractors
Water Quality and Hydrology	• Excess sediment input into waterway • Pollution of waterway from chemical spills (e.g. fuel or oil)	• Weather forecasts will be checked daily to ensure that work is not carried out before or during high rainfall. • Store all chemicals (e.g. fuel, oil) offsite and if required to be stored onsite, chemicals should be stored in appropriate bunding/storage systems, outside of the VRZ and only for short periods. • Ensure appropriate spill kits, are present onsite. • Ensure all equipment is in good working order. • Carry associated Safety Data Sheets (SDS) for all chemicals. • Do not use any chemicals that are labelled as 'harmful to marine life' or 'Class 9 Environmentally hazardous' as part of the proposed restoration and weed removal activities. • Wash all equipment, including, erosion and sediment control measures and trailers to prevent spread of exotic species. A visual check for vegetation and seeds on all equipment machinery to be used in the activities must be carried out before work commences. • Installation of sandstone bricks on creek banks are to ensure natural geomorphic processes through the creek are maintained i.e. ensuring the movement of sediment and woody debris through the channel is not inhibited and do not increase scour and erosion of the bed or banks in any storm events.	Project Manager All Staff/Contractors

Impact On	Reasons	Safeguards/Mitigation Measures	Responsibility
		• Woody debris within Ponds Creek to be left in-situ, where feasible, to maintain habitat for aquatic species.	
Biodiversity	• Damage to vegetation that is not proposed for removal • Harm to non-identified threatened flora and fauna species • Injured or orphaned wildlife	• Pre-works briefing to be undertaken by CoP staff advising of sensitive areas and relevant safeguards for these areas. • Clearly identify/demarcate the construction footprint area to staff undertaking the works to ensure minimal impact to Blue Gum High Forest canopy species and that direct impacts to vegetation are confined to the assessed footprint. • Installation of temporary protection fencing around the Tree Protection Zone of the isolated remnant trees and other trees located in proximity to the works in accordance with AS4970 – Protection of trees on development sites. This fencing is to remain in place for the duration of construction works and include appropriate signage indicating a no-go zone. • It is recommended that landscaping comprises native species known to occur within Blue Gum High Forest vegetation. • Works must be stopped if any previously undiscovered threatened species or communities are discovered during works. An assessment of the impact and any required approvals must be obtained. Works must not recommence until CoP has provided written approval to do so. • The site-specific CEMP must include instructions for dealing with orphaned or injured native animals and include the contact details for the NSW Wildlife Information, Rescue and Education Service Inc (WIRES) and Sydney Metropolitan Wildlife Services (Sydney Wildlife).	Project Manger All Staff/Contractors
Priority Weeds	• Spread of priority weeds	• Wash down equipment and vehicles prior to and after use, to manage the introduction and spread of weed propagules. • Treatment of weeds within and adjacent to the mapped threatened ecological communities should be undertaken in accordance with best practice as required under the *Biosecurity Act 2015*.	All Staff/Contractors
Aboriginal Heritage	• Discovery of unsuspected Aboriginal objects • Discovery of human remains • Harm to AHIMS sites as well as other area of Aboriginal Significance	• All contractors undertaking works on site should be briefed on the protection of Aboriginal heritage objects under the NPW Act, and the penalties for damage to these items. • A 2m exclusion buffer should be placed around each location (as recorded on the site card), appropriately fenced as a no-go zone and not impacted by the proposal. • If the proposal will impact on the location of the AHIMS sites an Aboriginal Cultural Heritage Assessment (ACHA) and an Aboriginal Heritage Impact Permit (AHIP) application will be required or the design of the proposal should be modified to avoid impacting the site. • Should an unexpected Aboriginal object be identified during construction, work in the immediate vicinity of the find is to stop and the area must be fenced off with suitable markers (star pickets, flagging or barrier mesh). The CoP Project Manager is to be notified. Engage an	Project Manager All Staff/Contractors

Impact On	Reasons	Safeguards/Mitigation Measures	Responsibility
		archaeologist to determine the significance of the find, and if required, determine the notification, consultation, and approval requirements. Works must not recommence until CoP has provided written approval to do so. • If human remains are discovered, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, the DPIE may also be contacted at this time to assist in determining appropriate management	
Historic Heritage	• Impacts to Heritage items	• In accordance with Section 146 of the *Heritage Act 1977*, if an archaeological relic (such as a deposit or artefact) is uncovered during works, work must cease in the affected area and a qualified archaeologist contacted to assess the find. Further advice and clarification may be sought from the Heritage Council of NSW, or the Heritage Division under delegation regarding assessment and approvals. • The ground level in areas of archaeological potential must be appropriately raised where excavation is required below 200 mm to avoid impacts to archaeological structures. • Any physical intervention that will result in the disturbance of relics will require application for an excavation permit under section 139 of the *Heritage Act 1977*. • Heritage induction should be presented to all construction staff by a qualified archaeologist to include mitigation strategy and identification of likely impacts. • An archaeologist should undertake a site visit during works to ensure no impacts to archaeology have occurred inadvertently. • Council should consider opportunities for interpretation of Kishnaghur House (c. 1836).	Project Manager All Staff/Contractors
Noise and Vibration	• Noise impacts on sensitive receivers in proximity	• Avoid simultaneous operation of noisy plant within discernible range of a sensitive receiver. • Works will only occur during the following times: Monday to Friday 7:00 am to 5:00 pm, Saturday 8:00 am to 1:00 pm. • Maximise the distance between noisy plant items and nearby residential receivers and potential fauna habitat. • Orient equipment such as offensive noise carriers away from residential receivers and potential fauna habitat. • Plant used intermittently is to be throttled or shut down when not required. • Residents and other sensitive receivers must be notified of any works that are likely to be noisy at least five days prior to those works being carried out. • Excavation methods should be adopted which limit ground vibrations to not more than 10mm/sec. Vibration monitoring will be required. • Excavation equipment must be operated in a manner consistent with minimising vibration effects.	Project Manager All Staff/Contractors

Impact On	Reasons	Safeguards/Mitigation Measures	Responsibility
		• Where possible carry out works during the standard daytime working hours.	
Air Quality	• Dust generation from vibrating and ground disturbing works • Fumes generation from machinery • Cumulative impacts of greenhouse gas emissions	• Works must be minimised during high wind periods. • Dust suppression should be applied as required to limit excessive dust generation. • Plant and equipment must be regularly inspected to ascertain that fitted emission controls are operating efficiently. • Plant and equipment must be maintained in accordance with manufacturer's specifications to ensure that it is in a proper and efficient condition. • Do not have machinery running while not in use. • Minimise use of machinery for required activity only. • Vehicles to maintain recommended speed. • Look for excessive dust generation and slow down if needed. • Carry out works during the standard daytime working hours.	Project Manager All Staff/Contractors
Waste Management	• Excess spoil in the form of excavated material • Litter left on-site by staff/contractors	• Resource management options for the project must be considered against a hierarchy of the following order embodied in the Waste Avoidance and Resource Recovery Act 2001: ○ Avoid unnecessary resource consumption. ○ Recover resources (including reuse, reprocessing, recycling and energy recovery). ○ Dispose (as a last resort). • All wastes and excess spoil must be classified in accordance to the Waste Classification Guidelines (DECC, 2009) prior to disposal and transported to a licensed waste disposal facility. • All waste must be removed from the site on completion of the works. • Upon completion of waste disposal, all original weighbridge / disposal receipts issued by the receiving waste facility must be retained in a waste register as evidence of proper disposal. • An adequate number of bins must be placed and regularly serviced at the site for workers and all litter will be placed in these bins. Work areas of the project site are to be kept clean and free of litter, including cigarette butts, at all times.	All Staff/Contractors
Traffic	• Disruption to traffic flows	• Vehicles, materials and equipment must be positioned to minimise impacts to public access and parking. • Heavy vehicles, if required, will be restricted to specified routes. • If It is determined that road closures will be required at any stage of the project, a Traffic Management Plan should be implemented. • Council should determine the possible requirement for walking track and pedestrian pathway diversions to be required during the course of the works and should design them to minimise impacts to park users.	Project Manager All Staff/Contractors

Impact On	Reasons	Safeguards/Mitigation Measures	Responsibility
Visual Amenity and Landscape	• Impact on the community	• Notify community or neighbours before commencement of the works. • Position lighting to be directed away from houses and the Ponds Creek Riparian corridor wherever possible. • Floodlighting should be been designed to face inward, which will reduce the potential impacts of light pollution to nearby sensitive receivers. • Floodlighting should be switched off when not in use. • Intermittently placed pedestrian lighting will be designed to minimise light pollution and lingering / gathering whilst providing safe path of travel.	Project Manager All Staff/Contractors

6. Conclusion

ELA has undertaken an assessment of the impact on the environment as part of the upgrade works within both Sturt and Acacia Park, Telopea. The assessment has concluded that there will be no significant impact on any factors of the environment as a result of the abovementioned works if the proposed mitigation measures are implemented.

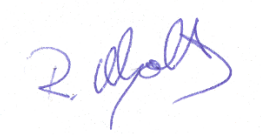
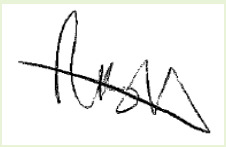
It is recommended that a CEMP is prepared that summarises all the relevant mitigation measures from this REF. The CEMP will guide the construction works and will be used as part of the site induction to familiarise all workers with the site environmental sensitivities. The CEMP should be approved by CoP and also include an Erosion and Sediment Control Plan (ESCP) as a sub-plan.

7. REF Determination and Conditions

7.1 Assessor Declaration

This REF provides a true and fair review of the activity in relation to its likely effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the project and provides sufficient information to determine whether there is likely to be a significant impact on the environment as a result of the Project.

I have considered all environmental impacts and safeguards to the best of my knowledge and have sought advice where required.

Project Name	Sturt and Acacia Park Upgrade Works - Review of Environmental Factors
Project Director Robert Mezzatesta Eco Logical Australia Level 3, 101 Sussex Street, Sydney 2000 Ph: 02 9259 3749	 Date: 21/9/2020
Project Manager Rebecca Ben-Haim Eco Logical Australia Level 3, 101 Sussex Street, Sydney 2000 Ph: 02 9259 3745	 Date: 21/9/2020

7.2 Determiner Declaration and Approval

I have reviewed the document and consider that the project will not have a significant impact and can proceed subject to the controls outlined in this REF.

Project Name	Sturt and Acacia Park Upgrade Works - Review of Environmental Factors
Role: Name: Company: Address: Phone Number:	[Signature] Date:
Role: Name: Company: Address: Phone Number:	[Signature] Date:

8. References

Department of Environment and Climate Change (DECC) 2009. *Interim Construction Noise Guideline, Department of Environment and Climate Change NSW.*

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Fairfull, S. (2013). *Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (2013 update)*. NSW Department of Primary Industries.

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Landcom (2004). *Managing Urban Stormwater: Soils and Construction. Volume 1, 4th Edition.* Available from https://www.environment.nsw.gov.au/resources/water/BlueBookVol1.pdf. Accessed 6 January 2020.

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Appendix A Concept Plans

LEGEND

1	Proposed park frontage and entry sign upgrade.
2	Proposed amphitheatre terracing with informal stage.
3	Proposed expansion and upgrade to existing skatepark facility.
4	Proposed recreational circuit path with picnic setting and sheltered stops.
5	Open space - common kickabout area.
6	Proposed replacement of playground for young children.
7	Proposed family picnic settings, BBQ, shelters dispersed throughout park.
8	Proposed amenities building
9	Multi-use court for informal recreation.
10	Proposed area for new playground (challenging nature play)
11	Enhancement to The Ponds Walk trail.
12	Enhancement to creek edge and slope retainment.
13	Proposed future crossing point and The Ponds Walk trail connection to Moffatts Drive.
14	Proposed sports field posts for informal play.
	Existing trees to be retained.
	Proposed shade tree planting, feature trees and low-lying shrubs.

PRECEDENT PARK FEATURES

CITY OF PARRAMATTA | **STURT PARK - PARK UPGRADE, TELOPEA**
CONCEPT PLAN

For information only | Date: MAY 2020

LANDSCAPE ARCHITECTURE
CAPITAL PROJECTS


Mulch under trees and remove deadwood from existing trees, crown raise canopies to min 3.0m to improve visual surveillance, safety and improve park identity.
Proposed boundary fencing to Evans road
EVANS ROAD
Proposed park name signage placed on new fence
Proposed minimum 1.5m wide access pathways connecting Evans Road and Loyd Avenue to Park
Re-linemark car parking spaces and provide two new central disabled parking spaces with shared zone and new kerb ramp
LORD AVENUE
Proposed play space area with themed play equipment, soft fall surfacing, seating, fencing between play space and Lord Avenue and irrigated garden beds planted with native grasses (Play Equipment TBD)
Proposed rotunda shelter structure, accessible picnic tables and bench units.
Proposed accessible bottle refill/bubbler drinking station and bin enclosure.
Proposed amenities building with 1 x ambulant and 1 x disabled cubicle and irrigation control system.
Proposed climbing net over garden bed with sandstone steps providing link between playspace and viewing mound.
Proposed rotunda shelter structure with accessible electric BBQ unit.
Proposed turfing at maximum 1:6 grade
OSBORNE AVENUE
Proposed sandstone block rock climb providing link between playspace and viewing mound platform.
Proposed DDA compliant accessible 3.3m high (from height of new pathway parallel to Osborne Avenue), viewing mound providing uninterrupted views of Parramatta CBD skyline. Includes circular concrete viewing platform, custom circular bench with half backrest/ armrests and DDA compliant accessible concrete ramps.
Proposed irrigated garden beds at maximum 1:4 grade mass planted with native plants.
Proposed sandstone block benches for additional seating, exercise and to retain garden bed mulch.
Proposed direct steps access between level turfed open space and viewing mound platform.
Regrade area to provide flat turfed open space for informal play
OSBORNE AVENUE
Proposed mature tree planting along alignment of circuit pathway.
Proposed balance trail with balance beams and stepping logs through garden beds
Proposed rotunda shelter structure, bin enclosure, picnic tables and bench units
Retain and protect existing trees on site
Proposed tree planted forest grove with crushed sandstone informal discovery pathways
LORD AVENUE
Proposed accessible bottle refill/bubbler drinking station
Proposed 280m Long Concrete circuit pathway with painted walking distance markers
Proposed sandstone block sandstone block seating benches and potential exercise units placed along pathway.
TILLEY STREET
Proposed picnic setting
1.
2.
3.
4.
5.
6.
7.
8.

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